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Self loading container vehicle - has container loading guides with row of rotatable cylinders forming ramp surface for container loading

RUSSELL J G TRANSP 21.05.88-GB-012085 (22.05.89-GB-011728)

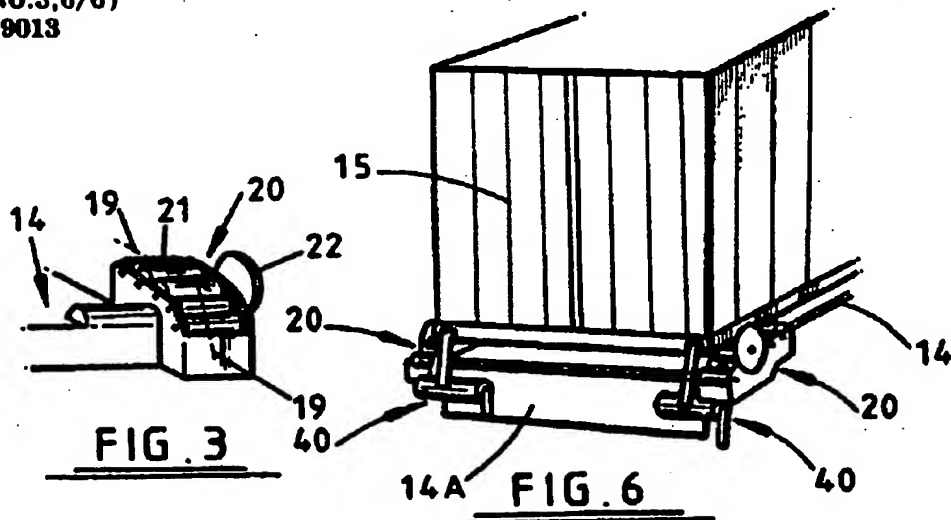
(24.01.90) B60p-01/64

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The self loading container vehicle is provided at the rear end of its chassis with a pair of container loading guides (20). Each guide includes a row of rotatable cylinders (21) arranged to form a ramp surface for use during container loading.

The guides also include lateral guidance surfaces (22) which provide lateral guidance to the container during and after loading. Hold down securing devices (40) are provided at the rear end of the chassis for connection via hooks to the container. The devices are ratchet operated to enable the hooks to be tensioned. (11pp Dwg.No.3,6/6)

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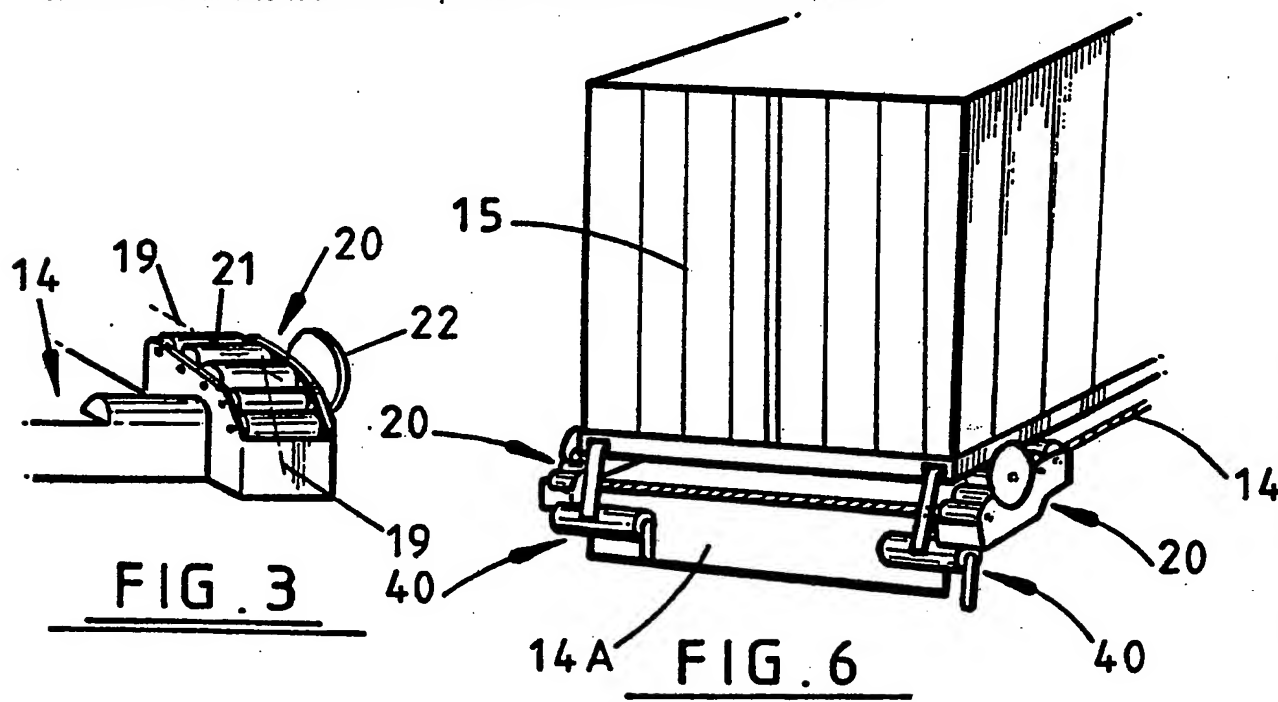
(58) Field of search

UK CL (Edition J) B8E, B8Q Q2DU Q2DX Q2D1

INT CL⁴ B60P

(54) Self loading container vehicles

(57) A self loading container vehicle is provided at the rear end of its chassis with a pair of container loading guides 20. Each guide 20 includes a row of rotatable cylinders 21 arranged to form a ramp surface for use during container loading. The guides 20 also include lateral guidance surfaces 22 which provide lateral guidance to the container during and after loading. Hold down securing devices 40 are provided at the rear end of the chassis for connection via hooks to the container. The devices 40 are ratchet operated to enable the hooks to be tensioned.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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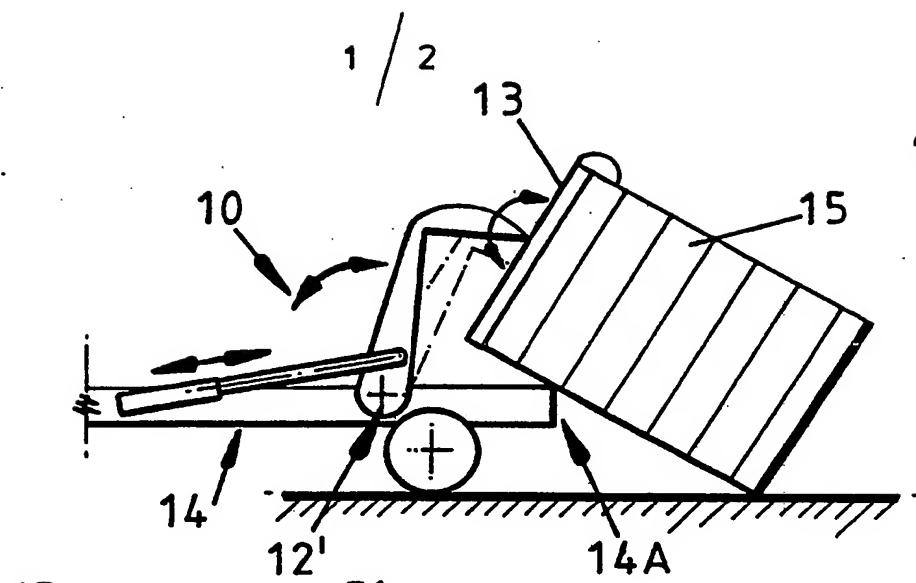


FIG. 1

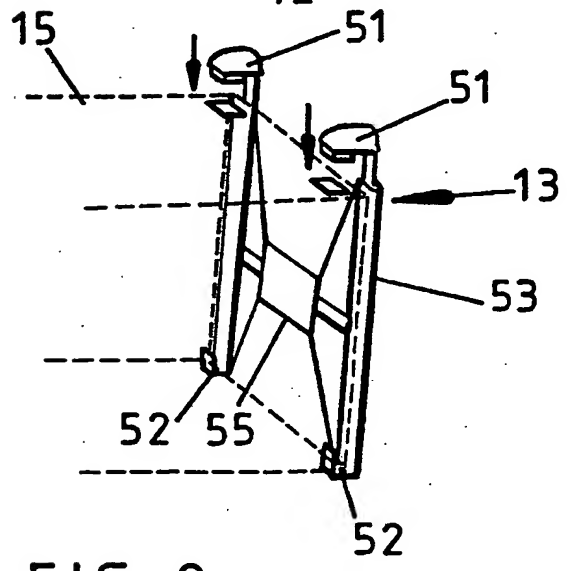


FIG. 2

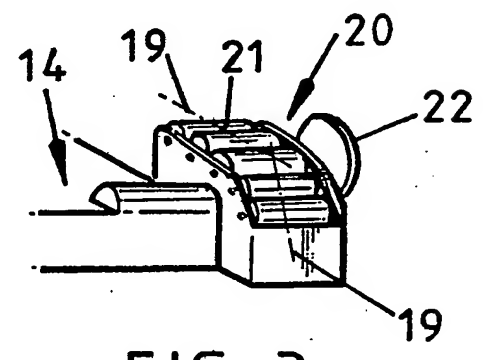


FIG. 3

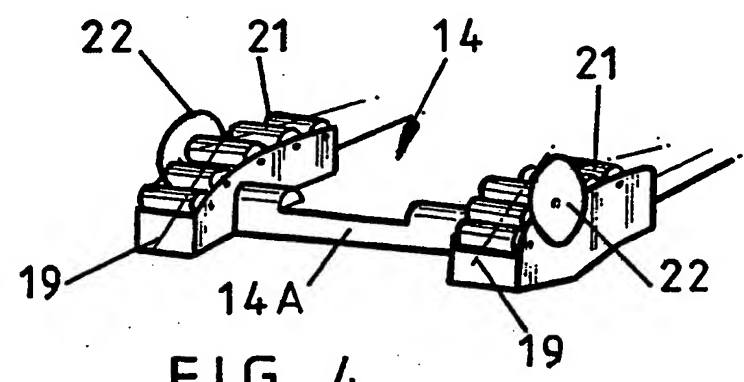
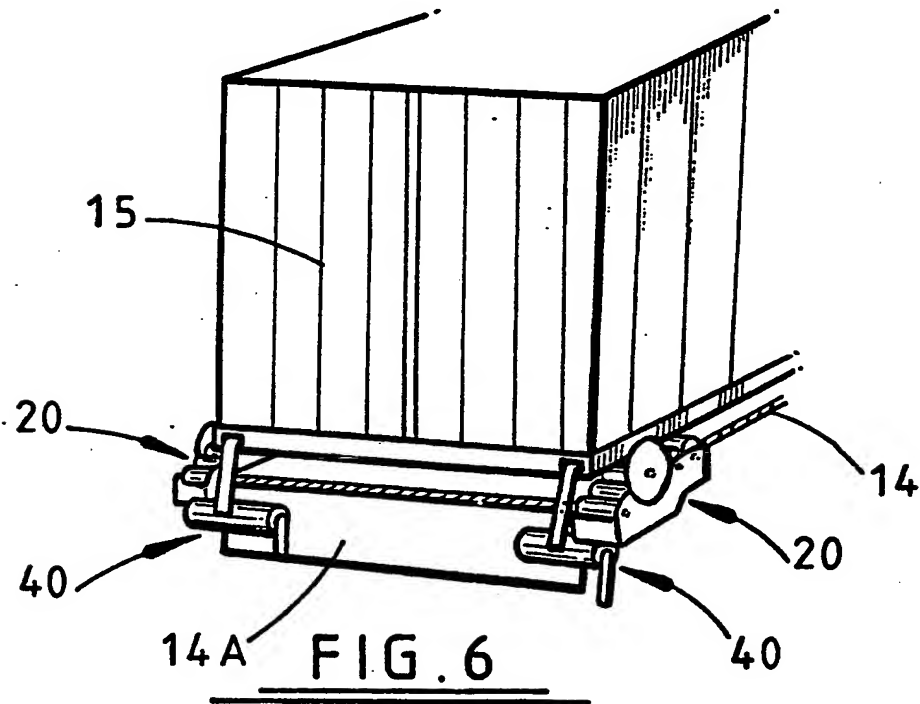
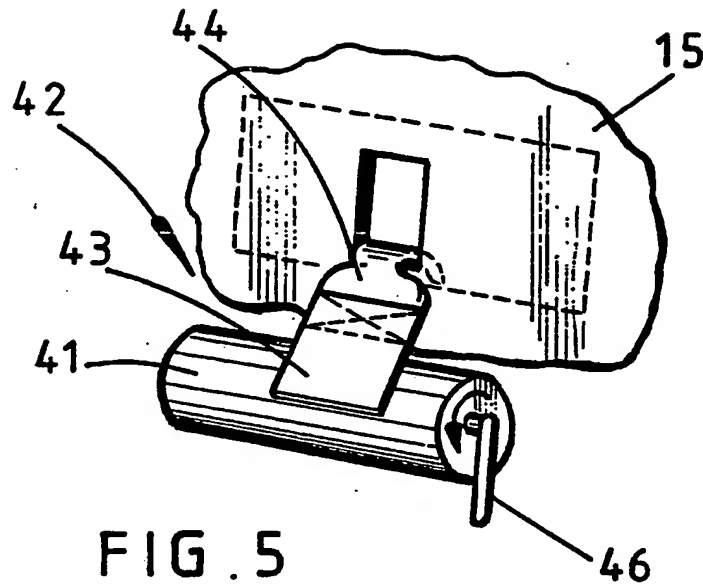


FIG. 4

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SELF LOADING CONTAINER VEHICLES

This invention relates to self loading container vehicles.

In known self loading container vehicles a container is pulled onto and is dismounted from the rear chassis of the vehicle using hydraulic rams forming part of a loading system fitted to the vehicle. Alignment of the container with the rear chassis of the vehicle is awkward and failure to achieve such alignment during loading may cause the container to slide off the side of the chassis resulting in damage to property and injury. A further problem is securing the loaded container to the vehicle. Lack of securing, especially at the rear of the vehicle can cause the vehicle to shed its load ie. container, thus causing major accidents.

It is an object of the present invention to provide a new improved form of self loading container vehicle which will obviate or substantially mitigate the aforesaid problems.

According to one aspect of the present invention there is provided a self-loading container vehicle wherein the rear chassis of the vehicle, for carrying a container, includes an opposed pair of laterally disposed guide mechanisms, each said guide mechanism having a planar guide surface for providing lateral guidance to a container and a row of rotatable members defining a ramp

support surface for container loading, said pair of guide mechanisms being located adjacent the rear end of said chassis.

Preferably the rotatable members of each guide mechanism are in the form of cylinders rotatably mounted at each end adjacent to and projecting orthogonally to said guiding surface. Preferably also each guide mechanism includes five such cylinders and said guiding surface is secured to and rotatable with the central cylinder.

According to a further aspect of the present invention there is provided a self-loading container vehicle the rear chassis of which carries a container securing device, said container securing device comprising fastening means for attaching to a container loaded on said vehicle, and adjustment means for tightening said fastening means to restrict movement of said loaded container.

Preferably said fastening means is a belt and hook arrangement mounted at the rear end of the vehicle chassis, said hook being mateable with said container.

Preferably also, tightening of said belt is achieved by rotation of a handle forming part of said adjustment means.

An embodiment of the present invention will now be described by way of example and with reference to the following drawings, in which:-

Fig. 1 schematically illustrates part of a

self-loading container vehicle during the course of loading a container;

Fig. 2 shows part of the Fig. 1 vehicle in greater detail;

Fig. 3 shows a container loading guide mechanism for use with the Fig. 1 vehicle in accordance with the present invention;

Fig. 4 schematically illustrates a pair of the Fig. 3 guides fitted to a Fig. 1 vehicle;

Fig. 5 shows a container securing device for use with the Fig. 1 vehicle in accordance with the present invention; and

Fig. 6 shows a pair of the Fig. 5 devices fitted to a container self-loading vehicle.

Part of a known self-loading container vehicle 10 is shown in Fig. 1 as including a hydraulic ram 11 pivotally mounted on the rear chassis 14 of the vehicle. The ram 11 is pivotally connected at its free end to a cranked arm 12 which is pivotably mounted at one end of the chassis 14 about the point 12', the other end of arm 12 being pivotally attached to a loading frame 13 which is capable of being removably attached to a container 15. The two legs of the cranked arm 12 may themselves be pivotally interconnected and interconnected by a further hydraulic ram so as to enable variation of the angle between these legs.

Fig. 2 shows the loading frame 13 in greater detail as

having two hollow vertical struts 53 the lower ends of which carry twist-lock projections 52 for engaging in apertures provided for this purpose at the bottom edge of the container 15. The upper ends of the struts 53 telescopically carry clamp members 51 having downturned projections for engaging in apertures provided for this purpose on the top of the container 15. The struts 53 are rigidly interconnected by metal work including a centralised plate 55 to which the arm 12 is connected. When the ram 11 is fully extended frame 13 is clear of the rear end 14A of the chassis 14 and in known manner can be secured to one end of the container 15 when the container is resting on the ground. When the ram 11 is contracted the arm 12 pivots and initially raises the frame 13 and the associated end of the container 15 to a level above end 14A of the chassis. Since, however, the container 15 is heavier than the vehicle further contraction of ram 11 causes the vehicle to free wheel backwards to container 15 and on contacting end 14A the container 15 is forced onto and along the chassis 14. The operator of the vehicle loading system must keep the container 15 aligned with the rear of the chassis 14 to allow safe loading of the container 15.

Fig. 3 shows one container loading guide 20 forming part of a pair of such guides for use with the vehicle 10 in accordance with the present invention. The guide 20 comprises a row of rotatable members conveniently being

five rotatable cylinders 21 mounted on a rigid structure, each cylinder 21 being rotatable independently of the others and projecting orthogonally from an upstanding guiding surface 22. The two guides 20 are secured rigidly to chassis 14 at its end 14A in the manner shown in Fig. 4 so that guiding surfaces 22 are laterally opposed and provide lateral guidance to the container 15 during loading with each surface 22 coplanar with the intended direction of movement of the container 15. The cylinders 21 are arranged to form a ramp support surface 19 to make movement of the container 15 onto the chassis 14 easier by providing an incline composed of rotatable members up which the container 15 is pulled by the ram. As is shown in Fig. 3 in this embodiment the ramp incline is formed by only three of the cylinders 21 and the other two cylinders 21 of each guide 20 provide a rotatable support surface for assisting further movement of the container 15 to seat at its other end fully and properly on the chassis 14 and to assist in off-loading the container 15.

It will be appreciated that three or more rotatable cylinders may be used to form the container loading guide, and the alignment and spacing of the cylinders will also determine the angle of incline at which the container is loaded onto the vehicle. It will be further appreciated that loading of the container vehicle can be controlled from inside or outside the vehicle cab. When the container 15 is loaded it is supported at its rear end.

during use, by the rollers 21 of the two guides 20.

Fig. 5 shows a container securing device 40 for use with the vehicle 10 also in accordance with the present invention, device 40 comprising fastening means 42 in the form of a belt 43 and hook 44 arrangement. The device 40 comprises a hollow body member 41 which is secured as illustrated in Fig. 6 at the rear end of the rear chassis 14 and contains a wound-up length of the belt 43. The belt 43 can be tightened by rotation of a handle 46 forming part of a ratchet type adjustment means. In use, the hook 44 is hooked onto the wall of a twist-lock pocket 45 on the container 15 and belt 43 is tightened by handle 46, thus providing a secure connection between the securing device 40 and the container. Two container securing devices 40 are shown in Fig. 6 mounted at the rear of the vehicle as to maximise the restriction of movement of the container 15.

It will also be appreciated that further container securing devices 40 may be disposed at other points on the rear chassis of the vehicle where fastening of the container is required.

Claims

1. A self-loading container vehicle wherein the rear chassis of the vehicle, for carrying a container, includes an opposed pair of laterally disposed guide mechanisms, each said guide mechanism having a planar guide surface for providing lateral guidance to a container and a row of rotatable members defining a ramp support surface for container loading, said pair of guide mechanisms being located adjacent the rear end of said chassis.
2. A self loading container vehicle as claimed in claim 1, wherein the rotatable members of each guide mechanism are in the form of cylinders rotatably mounted at each end adjacent to and projecting orthogonally to said guiding surface.
3. A self loading container vehicle as claimed in claim 2, wherein each guide mechanism includes five such cylinders and said guiding surface is secured to and rotatable with the central cylinder.
4. A self-loading container vehicle the rear chassis of which carries a container securing device, said container securing device comprising fastening means for attaching to a container loaded on said vehicle, and adjustment means for tightening said fastening means to restrict movement of said loaded container.
5. A self loading container vehicle as claimed in claim 4, wherein said fastening means is a belt and hook

arrangement mounted at the rear end of the vehicle chassis, said hook being mateable with said container.

6 A self loading container vehicle as claimed in claim 5, wherein tightening of said belt is achieved by rotation of a handle forming part of said adjustment means.

7. A self loading container vehicle substantially as hereinbefore described with reference to the accompanying drawings.